

6/21/99  
JC598 U.S. PTO

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

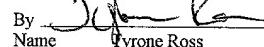
Applicant: SUUTARI et al.  
Docket: 7510.184USW1  
Title: PROCEDURE FOR ENSURING THE OPERATION OF SIGNALLING CHANNELS IN A V5 INTERFACE

JC598 U.S. PTO  
06/21/99  
336862

CERTIFICATE UNDER 37 CFR 1.10

"Express Mail" mailing label number. EL455015283US  
Date of Deposit 21 June 1999

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By   
Name Tyrone Ross

REQUEST FOR FILING A CONTINUATION OF AN INTERNATIONAL APPLICATION

Box Patent Application  
Assistant Commissioner for Patents  
Washington, DC 20231

Dear Sir:

This is a request for filing a continuation application under 37 CFR § 1.53(b) and 35 U.S.C. § 111(a), of pending prior international application Number PCT/FI98/00198, filed on 5 March 1998 entitled PROCEDURE FOR ENSURING THE OPERATION OF SIGNALLING CHANNELS IN A V5 INTERFACE, which designated the United States.

1.  Enclosed is the application as follows: 6 pages of specification, 5 claims, 1 page of abstract, 1 sheet of drawings.

CLAIMS AS FILED

NUMBER FILED	NUMBER EXTRA	RATE	FEES
<b>TOTAL CLAIMS:</b> 5	-20	0	\$18.00
<b>INDEPENDENT CLAIMS</b> 1	-3	0	\$78.00
<b>BASIC FILING FEE:</b>			\$760.00
<b>TOTAL FILING FEE:</b>			\$760.00

2.  A statement to establish small entity status under 37 C.F.R. 1.9 and 1.27 is enclosed.
3.  A check in the amount of \$760.00 is enclosed.
4.  The Commissioner is hereby authorized to charge any fees which may be required under 37 C.F.R. 1.16 and 1.17, or credit any overpayment to Deposit Account No. 13-2725.
5.  Amend the specification by inserting before the first line the sentence: "This application is a continuation of international application number PCT/FI98/00198, filed 5 March 1998, pending."

Address all future correspondence to:

Michael B. Lasky  
Merchant & Gould P.C.  
3100 Norwest Center  
90 South Seventh Street  
Minneapolis, MN 55402-4131

6.  A signed declaration under 37 C.F.R. 1.63 is enclosed.
7.  A set of formal drawings (1 sheet) is enclosed.
8.  An Assignment of the invention to , Recordation Form Cover Sheet, and fee of \$ is enclosed.
9.  Priority of foreign application number 971142, filed on 18 March 1997 in Finland, is claimed under 35 U.S.C. 119(a)-(d).
- The certified copy is enclosed.
10.  A preliminary amendment is enclosed.
- Also enclosed: Communication re: Submission of Priority Document; copy of International Preliminary Examination Report; Information Disclosure Statement; Form 1449; International Search Report; references cited (5)
- Return postcard

Respectfully submitted,

MERCHANT & GOULD P.C.  
3100 Norwest Center  
90 South Seventh Street  
Minneapolis, Minnesota 55402  
(612) 332-5300

By

Michael B. Lasky  
Reg. No. 29,555

Dated: 21 June 1999

MBL/smh

S/N unknown

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: SUUTARI et al. Docket No.: 7510.184USW1  
Serial No.: unknown Filed: concurrent herewith  
Int'l Appln No.: PCT/FI98/00198 Int'l Filing Date: 5 March 1998  
Title: PROCEDURE FOR ENSURING THE OPERATION OF SIGNALLING CHANNELS IN A V5 INTERFACE

CERTIFICATE UNDER 37 CFR 1.10

'Express Mail' mailing label number: EL455015283US

Date of Deposit: 21 June 1999

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By:   
Name: Tyrone Ross

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, D. C. 20231

Dear Sir:

In connection with the above-identified application filed herewith, please enter the following preliminary amendment:

IN THE ABSTRACT

Insert the attached Abstract page into the application as the last page thereof.

IN THE CLAIMS

Claim 3, line 1, delete "or 2".

Claim 4, line 1, delete "or 2".

Claim 5, lines 1-2, replace "any one of the preceding claims 1 - 4" with --claim 1--.

REMARKS

The above preliminary amendment is made to remove multiple dependencies from claims 3-5.

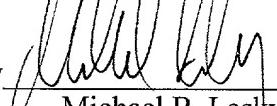
A new abstract page is supplied to conform to that appearing on the publication page of the WIPO application, but the new Abstract is typed on a separate page as required by U.S. practice.

Applicants respectfully request that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Michael B. Lasky (Reg. No. 29,555), at (612) 336-4634.

Respectfully submitted,

MERCHANT & GOULD P.C.  
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By   
Michael B. Lasky  
Reg. No. 29,555

Dated: 21 June 1999

MBL/smh

PROCEDURE FOR ENSURING THE OPERATION OF SIGNALLING CHANNELS IN A V5 INTERFACE

The present invention relates to a procedure  
5 as defined in the preamble of claim 1 for ensuring the operation of protected signalling channels in a V5 interface between a local exchange and an access node in conjunction with a redefinition of the composition of the interface.

10 Open interfaces (V5.1 and V5.2) between an access node and a local exchange are defined in the ETSI (European Telecommunications and Standards Institute) standards of the ETS 300 324 and ETS 300 347 series. V5 interfaces enable subscribers belonging to a physically separate local network to be connected to a telephone exchange using a standard interface. In the present application, V5 interface expressly refers to a dynamic concentrator interface (V5.2) as defined in the ETS 300 347 standard series, consisting of one or 20 more (1 - 16) PCM (Pulse Code Modulation) cables. One PCM cable comprises 32 channels, each of which with a transfer rate of 64 kbit/s, i.e. 2048 kbit/s in all. The V5.2 interface supports analogue telephones as used in the public telephone network, digital, such as 25 ISDN (Integrated Services Digital Network) basic and system subscriber connections as well as other analogue or digital terminal equipment based on semi-fixed connections.

Certain time slots in the V5 interface, which 30 form a channel called C-channel, serve to transmit the protocols used for controlling the interface itself and the calls transmitted over the interface. A C-channel or a 64 kbit/s time slot reserved for this purpose serves to transmit information that may belong 35 e.g. to the Control protocol, Link control protocol, Protection protocol or BCC protocol of the V5 interface, or which may consist of PSTN signalling or ISDN

data. Further, according to the standards mentioned above, a C-channel can be reserved for time slots 16, 15 and/or 31 in the PCM line or V5 interface link. Especially in a V5.2 interface, the system automatically creates C-channels for the critical protocols (Control, Link control, BCC and Protection), whereas the operator can place the PSTN signalling as desired, either in the same channel with the critical protocols or in another C-channel. In addition, the operator may allocate a maximum of three signalling channels as so-called backup channels. These channels are resorted to in the case of a failure of the link to which the channels were originally allocated. In a V5.2 interface having more than one 2-Mbit/s link, a link whose physical C-channel in time slot 16 transmits the Control, Link control, BCC and Protection protocols is defined as the primary link. Further, a link whose physical C-channel in time slot 16 only transmits the Protection protocol is a secondary link.

The above-mentioned standards define two different ways of changing the data for a V5 interface already activated. Changing the data means e.g. that a signalling channel is transferred to another time slot or that additional signalling channels are introduced. Such changes can be effected using the so-called reprovision function defined in the standard, in which case the altered data are given a new "designation" (provision variant) at both ends, i.e. in the local exchange and in the access node. The provision variant is a parameter which is checked in conjunction with the start-up of the V5 interface. This verification serves to ensure that both the local exchange and the access node observe the same composition in the V5 interface. Composition means in the first place the locations and order of the signalling channels. When the parameter in question is assigned a new value, this means that e.g. the signalling channels have a new lo-

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cation. When the changes are activated at both ends, i.e. when the interface is started up, the hardware first ensures via signalling that the new value of the "provision variant" is known at both ends, whereupon 5 the changes of composition or configuration are made independently according to the parameter in question. However, it is also possible to make changes in the V5 interface without using the reprovision function. In this case, the changes are made independently at both 10 ends without altering the value of the provision variant parameter. When the changes are activated, the defined changes are made automatically at both ends and the interface is started up.

The locations of the signalling channels in 15 an active interface may change in consequence of a protection switch-over of a signalling channel. This creates a situation where the interface configuration is no longer consistent with the configuration originally defined by the operator. The problem is that the 20 above-mentioned standards do not define whether the possible protection switch-over cases should be taken into account or not when a new configuration or composition is introduced. Further, when the composition of the interface is being defined, it must also be taken 25 into account that one of the links may have been damaged and that consequently the signalling channels transmitted via that link are switched over to another link. Figures 1a and 1b present an example of such a situation. Fig. 1a illustrates normal operation between 30 a local exchange LE and an access node AN. In this V5 interface, the signalling channel, which may be e.g. the BCC protocol, has been allocated to the topmost link in the V5 interface. Further, a backup channel has been allocated to the bottommost link in 35 the interface. Fig. 1b illustrates an example situation where the backup channel and signalling channel are

swapped, i.e. the signalling channel is switched over to the backup channel when the link is damaged.

The object of the present invention is to eliminate the problems described above. A specific object of the present invention is to present a new procedure that makes it possible to flexibly ensure the activation of the signalling channels in a V5 interface when a new composition is defined for the V5 interface without the reprovision function.

In the procedure of the invention, in a V5 interface between a local exchange and an access node, said interface comprising at least two links, to ensure the operation of the signalling channels in conjunction with a redefinition of the interface composition, in which redefinition changes are made in the V5 interface data, such as the placement of signalling channels on the links, according to the invention, the operation of protected channels is ensured in conjunction with restarting by activating the protected channels on the channels defined for them in the new composition and/or on the channels to which they were transferred in conjunction with the protection switch-over. The redefinition of the V5 interface composition is preferably carried out independently both in the local exchange and in the access node without changing the value of the interface composition parameter.

In an embodiment of the invention, the channels transferred to a backup channel in conjunction with protection switch-over are left at the locations to which they were transferred in conjunction with the switch-over, regardless of the redefined composition of the V5 interface.

In an embodiment of the invention, changes in conjunction with a redefinition of the composition of a V5 interface are made in the original composition regardless of protection switch-over operations carried out in the V5 interface.

In the following, the invention will be described by the aid of a preferred embodiment by referring to the attached drawings, in which

Fig. 1a represents a V5 interface according  
5 to the invention;

Fig. 1b represents a functional state of the  
V5 interface in Fig. 1a;

Fig. 2b represents a functional state according  
10 to the present invention; and

Fig. 2b represents another functional state  
according to the present invention.

Figures 1a and 1b present a V5 interface according to the invention between a local exchange LE and an access node AN. In Fig. 1a, a signalling channel has been configured to use the topmost link in the V5 interface. Further, a backup channel to which one of the signalling channels can be switched over has been configured to be carried by the bottom link. In Fig. 1b, a switch-over of the signalling channel to the backup channel is carried out due to malfunction of the top link, in other words, the signalling channel originally allocated to the top link is transferred to the bottom link in place of the backup channel.

Fig. 2 illustrates a solution according to the invention for ensuring the activation of the signalling channels when a new V5 interface composition is defined without using the reprovision function. In the solution presented in Fig. 2, when a backup configuration is introduced, protection switch-overs of signalling channels carried out previously in the interface are taken into account. In practice, this means that the signalling channels already switched over as illustrated by Fig. 2a are left at the locations to which they have been transferred in consequence of protection switch-over, in this case on the lowest link, and not at the locations where they were placed in the original configuration. Further, in Fig. 2a a

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redefinition has been performed in which it has been decided that the original backup channel, which has been on the lowest link as shown in Fig. 1a, shall be removed. The system removes it based on the situation  
5 after the switch-over, so in this case the backup channel is removed from the physical location that in the operator's original composition contained a signalling channel (from the top link). Fig. 2b illustrates another solution according to the invention for  
10 ensuring the activation of signalling channels. In the arrangement presented in Fig. 2b, the changes are made in the composition originally created in the system by the operator, without taking into account any protection switch-overs carried out before. Thus, in a situation as illustrated by Fig. 2b, the system removes  
15 the signalling channel from the physical location where the operator had originally placed it, in this case from the lowest link.

The invention is not restricted to the examples of its embodiments described above, but many variations are possible within the scope of the inventive idea defined by the claims.  
20

## CLAIMS

1. Procedure for ensuring the operation of signalling channels in a V5 interface between a local exchange (LE) and an access node (AN), said interface comprising at least two links (L), in conjunction with redefinition of the interface composition, in which redefinition changes are made in the V5 interface data, such as the location of signalling channels on the links, characterised in that the operation of protected channels in conjunction with restarting is ensured by starting the protected channels on the channels defined for them in the new composition and/or on the channels to which they were transferred in conjunction with the protection switch-over.

2. Procedure as defined in claim 1, characterised in that the redefinition of the V5 interface composition is carried out independently both in the local exchange (LE) and in the access node (AN) without changing the value of the interface composition parameter.

3. Procedure as defined in claim 1 or 2, characterised in that the channels transferred to a backup channel in conjunction with protection switch-over are left at the locations to which they were transferred in conjunction with the switch-over, regardless of the redefined composition of the V5 interface.

4. Procedure as defined in claim 1 or 2, characterised in that composition changes in conjunction with the redefinition of the composition of the V5 interface are made in the original composition regardless of protection switch-over operations carried out in the V5 interface.

35 5. Procedure as defined in any one of the preceding claims 1 - 4, characterised in that the interface composition parameter is a provision va-

riant parameter of the V5 interface as defined by the V5 specifications.

## **ABSTRACT OF THE DISCLOSURE**

The present invention relates to a procedure for ensuring the operation of signalling channels in a V5 interface between a local exchange (LE) and an access node (AN), said interface comprising at least two links (L), in conjunction with redefinition of the interface composition. Redefinition generally involves making changes in the V5 interface data, such as the location of signalling channels on the links. According to the invention, the operation of protected channels in conjunction with restarting is ensured by starting the protected channels on the channels defined for them in the new composition and/or on the channels to which they were transferred in conjunction with the protection switch-over.

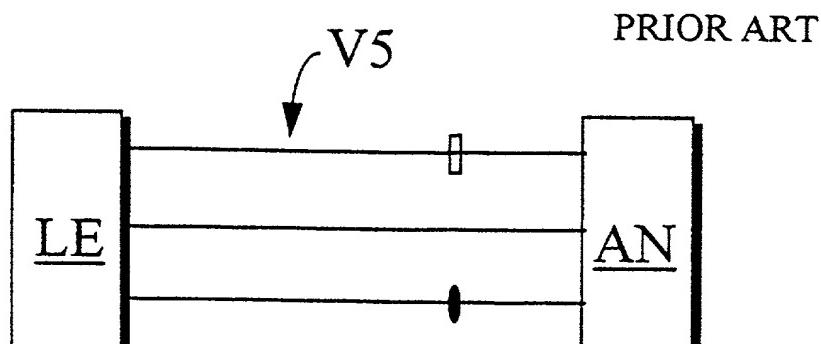


Fig 1a

PRIOR ART

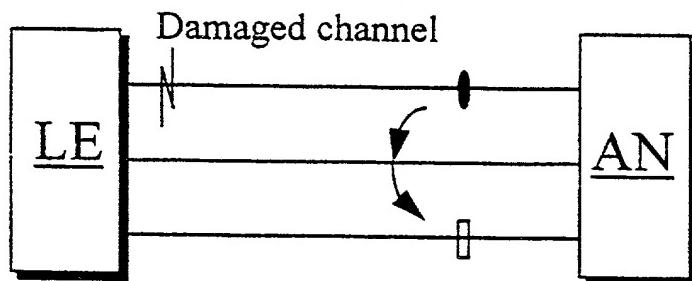


Fig 1b

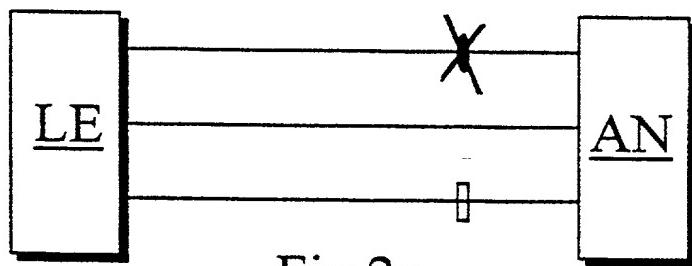


Fig 2a

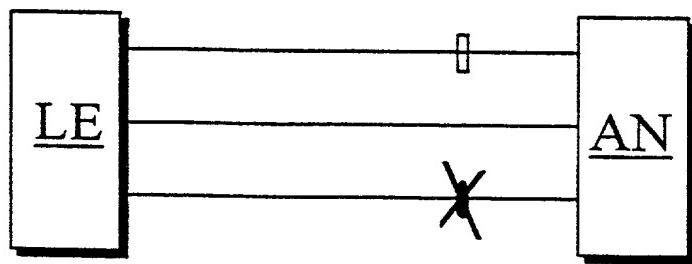


Fig 2b

○ = backup  
channel  
(standby)

□ = signalling  
channel

Attorney Docket No. 7510.184USW1

**MERCHANT & GOULD P.C.**

11888

NC 11464

**United States Patent Application****COMBINED DECLARATION AND POWER OF ATTORNEY**

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: PROCEDURE FOR ENSURING THE OPERATION OF SIGNALLING CHANNELS IN A V5 INTERFACE

The specification of which

- a.  is attached hereto  
 b.  was filed on as application serial no. and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. filed and as amended on (if any), which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (attached hereto).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

- a.  no such applications have been filed.  
 b.  such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
FINLAND	971142	18 March 1997	
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)
PCT/FI98/00198	5 March 1998	pending

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith:

Albrecht, John W.	Reg. No. 40,481	Lacy, Paul E.	Reg. No. 38,946
Anderson, Gregg I.	Reg. No. 28,828	Larson, James A.	Reg. No. 40,443
Ansems, Gregory M.	Reg. No. 42,264	Lasky, Michael B.	Reg. No. 29,555
Batzli, Brian H.	Reg. No. 32,960	Liepa, Mara E.	Reg. No. 40,066
Beard, John L.	Reg. No. 27,612	Lindquist, Timothy A.	Reg. No. 40,701
Black, Bruce E.	Reg. No. 41,622	Lynch, David W.	Reg. No. 36,204
Blasdell, Thomas L.	Reg. No. 31,329	Marschang, Diane L.	Reg. No. 35,600
Bogucki, Raymond A.	Reg. No. 17,426	McDaniel, Karen D.	Reg. No. 37,674
Bruess, Steven C.	Reg. No. 34,130	McDonald, Daniel W.	Reg. No. 32,044
Byrne, Linda M.	Reg. No. 32,404	McIntyre, Iain A.	Reg. No. 40,337
Carlson, Alan G.	Reg. No. 25,959	Mueller, Douglas P.	Reg. No. 30,300
Carter, Charles G.	Reg. No. 35,093	Nasiedlak, Tyler L.	Reg. No. 40,099
Caspers, Philip P.	Reg. No. 33,227	Nelson, Albin J.	Reg. No. 28,650
Chiapetta, James R.	Reg. No. 39,634	Pauly, Daniel M.	Reg. No. 40,123
Clifford, John A.	Reg. No. 30,247	Phillips, John B.	Reg. No. 37,206
Cochran, William W.	Reg. No. 26,652	Plunkett, Theodore	Reg. No. 37,209
Daignault, Ronald A.	Reg. No. 25,968	Pytel, Melissa J.	Reg. No. 41,512
Daley, Dennis R.	Reg. No. 34,994	Reich, John C.	Reg. No. 37,703
Dalglash, Leslie E.	Reg. No. 40,579	Reiland, Earl D.	Reg. No. 25,767
Daulton, Julie R.	Reg. No. 36,414	Rittmaster, Ted R.	Reg. No. 32,933
DeVries Smith, Katherine M.	Reg. No. 42,157	Schmaltz, David G.	Reg. No. 39,828
DiPietro, Mark J.	Reg. No. 28,707	Schuman, Mark D.	Reg. No. 31,197
Edell, Robert T.	Reg. No. 20,187	Schumann, Michael D.	Reg. No. 30,422
Epp Ryan, Sandra	Reg. No. 39,667	Scull, Timothy B.	Reg. No. 42,137
Funk, Steven R.	Reg. No. 37,830	Sebald, Gregory A.	Reg. No. 33,280
Glance, Robert J.	Reg. No. 40,620	Skoog, Mark T.	Reg. No. 40,178
Golla, Charles E.	Reg. No. 26,896	Soderberg, Richard	Reg. No. P-43,352
Gorman, Alan G.	Reg. No. 38,472	Sumner, John P.	Reg. No. 29,114
Gould, John D.	Reg. No. 18,223	Sumners, John S.	Reg. No. 24,216
Gregson, Richard	Reg. No. 41,804	Tellekson, David K.	Reg. No. 32,314
Gresens, John J.	Reg. No. 33,112	Trembath, Jon R.	Reg. No. 38,344
Hamre, Curtis B.	Reg. No. 29,165	Underhill, Albert L.	Reg. No. 27,403
Hillson, Randall A.	Reg. No. 31,838	Vandenburgh, J. Derek	Reg. No. 32,179
Holzer, Jr., Richard J.	Reg. No. 42,668	Vradenburgh, Anna M.	Reg. No. 39,868
Johnston, Scott W.	Reg. No. 39,721	Welter, Paul A.	Reg. No. 20,890
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Kettelberger, Denise	Reg. No. 33,924	Wickhem, J. Scot	Reg. No. 41,376
Knearl, Homer L.	Reg. No. 21,197	Williams, Douglas J.	Reg. No. 27,054
Komanduri, Janaki	Reg. No. 40,684	Witt, Joneille	Reg. No. 41,980
Kowalchyk, Alan W.	Reg. No. 31,535	Wood, William J.	Reg. No. 42,236
Kowalchyk, Katherine M.	Reg. No. 36,848	Xu, Min S.	Reg. No. 39,536
Kubota, Glenn M.	Reg. No. 44,197		

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary.

Please direct all correspondence in this case to Merchant & Gould P.C. at the address indicated below:

Merchant & Gould P.C.  
3100 Norwest Center  
90 South Seventh Street  
Minneapolis, MN 55402-4131

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2	Full Name Of Inventor	Family Name SUUTARI	First Given Name Jyrki	Second Given Name
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1	Post Office Address	Post Office Address Laurinkuja 2 B 10	City Oulu	State & Zip Code/Country 90420/ Finland

Signature of Inventor 201:

*Jyrki Suutari*

Date:

*Oulu 1.6.1999*

2	Full Name Of Inventor	Family Name LALLUKKA	First Given Name Toivo	Second Given Name
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Signature of Inventor 202:

*Olli Lallukka*

Date:

*Oulu 1.6.1999*

2	Full Name Of Inventor	Family Name RUKAJÄRVI	First Given Name Aaro	Second Given Name
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Signature of Inventor 203:

*Aaro Rukajärvi*

Date:

*Oulu 1.6.1999*

2	Full Name Of Inventor	Family Name LIINÄMAA	First Given Name Olli	Second Given Name
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Signature of Inventor 204:

*Olli Liinämaa*

Date:

*Oulu 1.6.1999*

**§ 1.56 Duty to disclose information material to patentability.**

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)–(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim;
- or
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
  - (i) Opposing an argument of unpatentability relied on by the Office, or
  - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

- (c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:
  - (1) Each inventor named in the application;
  - (2) Each attorney or agent who prepares or prosecutes the application; and
  - (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.
- (d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.